RECORD OF DECISION
FOR
OPERABLE UNIT #2

WALSH ROAD LANDFILL SITE

PART 1 - DECLARATION

SITE NAME AND LOCATION

Walsh Road Landfill Site (a.k.a. Welsh Landfill)
Honey Brook, Chester County, Pennsylvania
CERCLIS ID# PAD980829527
Operable Unit #2, Groundwater

STATEMENT OF BASIS AND PURPOSE

This Record of Decision ("ROD") presents the selected remedial action for Operable Unit Two ("OU2") at the Walsh Road Landfill Site (also known as "Welsh Road" or "Site") in Honey Brook Township, Chester County, Pennsylvania, chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") of 1980, as amended, 42 U.S.C. §9601 et seq. and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300.

The Commonwealth of Pennsylvania Department of Environmental Protection ("PADEP") does not concur with the Selected Remedy. However, PADEP agrees with the action proposed and noted their concerns regarding technical deficiencies with the remedy. The non-concurrence letter from PADEP is contained in the Site Administrative Record.

ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

This operable unit, OU2, is the second and final operable unit for the Site. OU2 is defined as groundwater impacted by the Site.

The selected remedy for OU2 is the preferred alternative identified in the Proposed Remedial Action Plan ("Proposed Plan") dated August 24, 2005. That alternative is Groundwater Monitoring and Institutional Controls. The components of this remedy consist of measures for long-term monitoring of contaminants in groundwater and institutional controls to restrict future groundwater use at the Site.

Specifically, under this alternative, no further remedial actions beyond those selected by EPA in the 1990 ROD and the 2003 ROD Amendment for OU1 will be taken at the Site. The groundwater monitoring required for the evaporation/transpiration ("ET") cover system under the OU1 ROD Amendment (July 2003) will be used to monitor trends and evaluate groundwater quality at the Site. In April 2005, EPA approved a PRP-prepared Groundwater Monitoring Plan ("GMP") for the OU1 remedy. The GMP describes the location, frequency, procedures, and analytical requirements for the groundwater monitoring program that will be employed at the Site.

Under the GMP, two baseline groundwater sampling events were conducted in 2005, prior to construction of the ET cover system. Groundwater sampling will continue to be conducted on a semi-annual basis during the second and fourth quarters of each year, beginning in the second quarter of 2006. A total of twelve (12) monitoring wells will be sampled for Target Compound List ("TCL") volatile organic compounds ("VOCs"), TCL semi-volatile organic compounds ("SVOCs"), target analyte list ("TAL") total and dissolved inorganics, and TCL pesticides, and polychlorinated biphenyls ("PCBs"). The specific monitoring wells to be sampled under the GMP include: MW-3, MW-5, MW-7, MW-BH, EPA-2, EPA-2A, EPA-3, EPA-4, EPA-4A, EPA-5, EPA-5A, and EPA-6. Figure 4 provides the locations of the twelve (12) monitoring well sampling locations at the Site.

The groundwater performance standards for OU2 will be evaluated at the same time the ET cover system is evaluated. This evaluation will be made during the Five-Year Review, but not less than five (5) years after EPA acceptance of the Interim RA Report for OU1. Any approved changes or modifications made to the GMP during implementation of the OU1 remedy shall be applicable to the OU2 remedy.

The Remedial Action Objectives ("RAOs") for OU2 are to prevent ingestion and inhalation of Site contaminants in excess of Maximum Contaminant Levels ("MCLs") and to restore groundwater aquifer quality to MCLs. The contaminants of concern ("COCs") for OU2 and their respective clean up levels, namely their respective MCLs, are:

COCs	MCL micrograms/liter ("ug/l")
Arsenic	10 parts per billion ("ppb")
Barium	2,000 ppb
Thallium	2 ppb

The OU1 ET cover system remedy also requires that deed notices, which provide notice of the landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater, be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. The deed notices will be placed on all properties on which the ET cover system is located after construction is complete. Construction of the ET cover system is expected to be completed in 2006.

ROD DATA CHECKLIST

The following information is included in the Decision Summary section of this Record of Decision for OU2. Additional information can be found in the Administrative Record for this Site.

- Contaminants of concern ("COCs") and their respective concentrations.
- Baseline risk presented by the COCs.
- Cleanup levels established for COCs and the basis for these levels.
- Current and reasonably anticipated future land use assumptions and current and potential beneficial uses of groundwater used in the baseline risk assessment and the ROD.
- Potential land and groundwater use that will be available at the Site as a result of the implementation of the Selected Remedy.
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate and number of years over which the Selected Remedy cost estimates are projected.
- Key factors that describe how the Selected Remedy provides the best balance of tradeoffs with respect to balancing and modifying criteria.

STATUTORY DETERMINATIONS

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy uses permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable. The remedy for OU2

satisfies the statutory preference for treatment that reduces toxicity, mobility, or volume as a principle element of the remedy.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, Five-Year Reviews will continue at this Site to assess whether the remedy continues to provide adequate protection of human health and the environment.

Abraham Ferdas, Director
Hazardous Site Cleanup Division
U.S. EPA, Region III

2/2/06
Date

RECORD OF DECISION
FOR
OPERABLE UNIT 2

WALSH ROAD LANDFILL SITE

PART 2 - DECISION SUMMARY

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RECORD OF DECISION
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OPERABLE UNIT 2

WALSH ROAD LANDFILL SITE

PART 2 - DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The Walsh Road Landfill Site (also known as "Welsh Road" or "Site") is located on approximately seven (7) acres, near the top of Welsh Mountain, approximately 1.25 miles north of the town of Honey Brook, Pennsylvania (Figure 1). The Site was placed on the National Priority List ("NPL") in September 1984. The National Superfund electronic database identification number for the Site is PAD980829527.

The entrance to the Site borders on Welsh Road, 200 feet east of the intersection of Welsh Road with PA Route 10 (Figure 2). Approximately five-sixths of the property area lies south of the Chester/Lancaster County line in Honey Brook Township, Chester County, while the remainder is located in Caernarvon Township, Lancaster County. The areas east, southeast, northeast, and west/southwest of the Site are wooded with light residential population. Wood lots, farm fields, and pastures are located directly south of the Site. The nearest surface water consists of a series of three small ponds located within pasture land approximately ½ mile south of the Site.

The predominant feature at the Site is a landfill that covers nearly the entire Site. The landfill was apparently constructed as a side-hill facility directly on top of the existing land surface. The Site is currently vacant and the surface of the landfill area was recently cleared of buildings, offices, vehicles, equipment and other debris. There is minimal vegetation on the landfill area. A gravel access road is located along the western and southern borders of the landfill property. A fifty-foot power line/utility right-of-way also lies along the southern portion of the boundary of the Site.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Site was constructed as a side-hill facility in which the landfill materials were placed directly on the existing ground surface near the ridge line of Welsh Mountain. The axis of Welsh Mountain extends northeast to southwest, with the mountain being the dominant topographical feature of the Site area.

The Site reportedly received mixed municipal and industrial wastes for landfill disposal between 1962 and 1976. Since the reported landfill closure in 1976, the Site owner made several attempts to obtain state and township approval for a landfill at the Site. Due to citizen complaints regarding Site activities and continued non-compliance with municipal solid waste

regulations, as noted by several inspections by state, county, and township officials, the operation was never permitted. The Site was then utilized at various times as a solid waste transfer and recovery facility, a maintenance and repair garage for vehicles and equipment, an office for a waste disposal business, and as a used auto business.

In July 1979, the Pennsylvania Department of Environmental Resources ("PADER"), which is the predecessor of the Pennsylvania Department of Environmental Protection ("PADEP"), received a complaint that drums stored at the Site had apparently leaked onto an adjacent property. PADER and EPA conducted several investigations at the Site between 1979 and 1984 which indicated that various organic and inorganic constituents were present in on-Site soils, groundwater, and seeps emanating from the landfill. Based on these findings and a subsequent evaluation of potential Site risks, EPA added the Site to the National Priorities List ("NPL") in September 1984.

PADER took the lead at the Site and a Remedial Investigation ("RI") was initiated at the Site in 1987 by SMC Martin, Inc. on behalf of PADER. The results of the RI were submitted in 1988 in a document entitled, "*Remedial Investigation Report for the Welsh Road/Barkman Landfill Site, Honey Brook, Pennsylvania.*" In 1987, 1988, and 1989, PADER and EPA sampled groundwater from residential wells in the vicinity of the Site. Based on the findings of these investigations and the information presented in the RI report, Baker/TSA, Inc. ("Baker") prepared a Public Health Evaluation Report on behalf of EPA, which indicated that conditions at and near the Site were a threat to human health due to the presence of organic and inorganic constituents in on-Site soils, sediments, surface water, and groundwater.

As a result of the findings of these investigations, EPA divided the Site into two Operable Units ("OU") to facilitate implementation of a remedy for the Site, as described below.

- The first operable unit ("OU1") addresses the public health concerns associated with on-Site soils/sediments and groundwater in nearby residential supply wells.

- The second operable unit ("OU2") addresses remediation of contaminated groundwater at the Site.

A Feasibility Study ("FS") was conducted by Baker to identify an appropriate remedial alternative for OU1. The results of the FS were reported in a document entitled, *"Draft Feasibility Study Report Welsh Road Landfill,"* which was submitted to EPA in January 1990. The FS identified general response actions required to remediate OU1 including containment, institutional controls, and provision of an alternate water supply to affected, or potentially affected, residences.

Based on the findings of the RI and FS, EPA issued a ROD for OU1 in June 1990. A summary of the components of the Selected Remedy that was set forth in the ROD for OU1 is provided below:

- The extension of the Honey Brook Borough water supply system will be designed to include the following components. Specific parameters may be subject to change pending completion of design and coordination with local and State agencies.

- Construction of an approximate one mile extension of an eight-inch diameter mainline along PA State Route 10 to a storage tank located near the top of Welsh Mountain. From the storage tank, 2-inch and 4-inch mainlines will be placed to distribute water by gravity flow to an estimated 50 households. The 50 households include those previously sampled and those presently receiving bottled water. The number and location of residences which will receive public water will be verified during the design of this remedial action.

- Approximately 6,500 feet of 8-inch water main, 7,500 feet of 4-inch and 3000 feet of 2-inch distribution lines will be installed along PA State Route 10 and Welsh Road. Service lines will be installed for each of the approximately 50 households.

- The current water supply system will be upgraded to provide sufficient capacity to service the impacted residents. This upgrade involves the installation of one water supply well and connection of this well to the current system. A booster pump and 120,000 gallon water storage tank are also included in the required system upgrade.

- Control of the new water lines and services will be transferred to the Honey Brook Borough Water Authority as soon as construction is completed.

- Groundwater monitoring data will be collected to monitor the current contaminant levels and possible migration. Wells will be sampled as part of the focused groundwater study to be completed for the second operable unit at the Site, which is planned to occur in tandem with the water line design. A five-year review will also include groundwater monitoring of Site wells, with analysis for the full list of CLP target parameters.

- At a minimum, a multi-media landfill cap that meets the requirements of the Pennsylvania Municipal Solid Waste Regulations will be designed to contain the contaminated soils and waste materials present at the Site. The initial activities include resource recovery, or salvaging of bulky items (cars, appliances, dumpsters, tires) presently placed on top of the landfill, demolition of on-Site buildings, and excavation and removal of underground petroleum storage tanks currently used to fuel vehicles used in the junkyard operation. Additional information will be collected in order to properly design the landfill cap, including: survey landfill extent, power lines, easements, and rights-of-way; characterization of the contents of the landfill and its potential to generate methane and other gases, and landfill geotechnical parameters; characterizing Site soils; and locating borrow soils with appropriate characteristics. Results and findings from the focused groundwater study will also be considered in designing the landfill cap, if available.

- A six-foot high fence topped with either barbed wire or razor ribbon will be constructed around the perimeter of the landfill in order to restrict unauthorized Site access and the use of the property for continued or future waste disposal.

- Property deeds for the landfill area will be modified, where appropriate, to indicate the landfill's presence, to restrict future use and property development, and to restrict use of groundwater by placing limitations on the installation of groundwater wells.

Since 1990, various components of the ROD for OU1 have been completed or initiated by EPA. A Focused Groundwater Study ("FGS") and a Focused Feasibility Study were performed in 1992 and 1993. The Final Focused Groundwater Study Report was submitted to EPA in November 1992. In November 1993, the Focused Feasibility Study was submitted to EPA which evaluated the results of the FGS and presented alternatives to remediate the contaminants of concern in the groundwater at the Site.

During the fieldwork for the FGS (July 1991 through January 1992), EPA issued a Unilateral Administrative Order ("Order") to the Site owners which required them to remove all scrap material (e.g., junk cars, tires, etc.) from the landfill surface. However, the Site owners failed to complete the Site clearing and leave the Site.

In February 1993, EPA approved a United States Army Corps of Engineers ("USACE") design document entitled, "*Final Design Analysis Report for the Welsh Road/Barkman Landfill Site*". This document summarized the design criteria and results of the pre-design investigations for the multi-media landfill cover system. The design for the landfill cap portion of the remedy consisted of the following components:

- a 6-inch (150-mm) thick vegetative soil cover;
- an 18-inch (450-mm) thick barrier soil layer;
- composite geonet/geotextile drainage layer;
- a 40-mil thick high-density polyethylene geomembrane layer; and
- a variable-thickness grading layer.

The design also called for an active landfill gas management system, surface water controls on the final cover, and a stormwater management pond at the perimeter of the cover.

In 1996, the project to extend the Honey Brook Borough Authority ("HBBA") water supply system was initiated and performed by USACE under an interagency agreement with EPA. In May 1998, a total of 45 residences were connected to the public water system. The HBBA accepted the final phase of the water line extension project in June 1999. The facilities transferred to the HBBA included a water treatment facility, a water storage tank, a booster pump station, a groundwater production well, and water mains. All residential wells which formerly served those residents were decommissioned as part of this project.

In March 1999, EPA issued an Order to all of the known Potentially Responsible Parties ("PRPs") requiring them to implement the EPA-approved design for the landfill cap. In October 2000, a group of PRPs ("PRP Group") submitted a proposal for implementing an evaporation/transpiration ("ET") cover system in lieu of the EPA-approved design. In July 2003, EPA issued an Amendment to the OU1 ROD specifying the ET cover system as the EPA-approved landfill capping system for the Site. That same month, EPA amended the 1999 Order to the PRPs requiring them to implement the Amendment to the OU1 ROD.

In the meantime, EPA pursued legal action against the Site owners requiring them to remove all of their property from the Site. In early 2003, the Site owners began removing materials from the Site and relocating their businesses pursuant to a court order. By October 2003, all materials and buildings were cleared from the surface of the Site.

Additional groundwater monitoring events were conducted by EPA in 1999 and 2002 to supplement the 1992 Focused Groundwater Study. During these events, only groundwater monitoring wells could be sampled since residential wells were abandoned when access to the public water system was provided. In 1999, EPA conducted two rounds of groundwater sampling from existing monitoring wells at the Site. The first round of sampling was conducted in April 1999 and involved twenty (20) monitoring wells located either on or adjacent to the landfill. The second groundwater sampling event was limited to ten (10) of the twenty (20) monitoring wells and was based on the locations and the analytical results of the first sampling event. The second round of sampling was conducted in July 1999. In 2002, the same ten (10) monitoring wells were sampled.

The PRP Group began development of a Remedial Design Work Plan ("RDWP") for the ET cover system in October 2004. Pre-design activities commenced in March 2004, following EPA approval of the RDWP. Several design submittals in progressive phases were submitted to EPA for review in 2004 and early 2005. The Final Design, which includes a Groundwater Monitoring Plan ("GMP") for the ET cover system, was approved by EPA in May 2005. The purpose of the GMP is to evaluate the groundwater quality conditions at the Site and to evaluate the performance of the landfill cover system. Initial baseline groundwater samples were collected in June and July 2005. The construction contractor for the ET cover system mobilized at the Site in early September 2005. Completion of the ET cover system is planned for the Spring of 2006.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Documents which EPA used to develop, evaluate, and select a remedy for the Site have been maintained at the Honey Brook Community Library, 637 Compass Avenue, Honey Brook, PA and at the EPA Region III Office, 1650 Arch Street, Philadelphia, PA. The Administrative Record for the Site can also be accessed remotely via the internet at http://www.epa.gov/arweb.

The Proposed Plan was released to the public on August 24, 2005. The notice of availability of the RI/FS and Proposed Plan was Published in the *West Chester Daily Local News* and *Tri-County Record* on August 24, 2005. In accordance with Sections 113 (k)(2)(B)(i-v) and 117(a) of CERCLA, 42 U.S.C. §§ 9613 (k)(2)(B)(i-v) and 9617(a), EPA held a public comment period from August 24, 2005, through September 22, 2005.

A public meeting was held during the public comment period on September 8, 2005. At the meeting, EPA presented a summary of the alternatives in the Proposed Plan and EPA's Preferred Remedy. EPA answered questions about the Site and the remedial alternatives. Two people attended the meeting. One was a concerned resident who lives near the Site, and the other was a consultant to the PRP Group. No local or state government officials or media representatives were present. There were no written or verbal comments submitted to EPA during the public meeting and the only written comments were from the PRP Group which EPA received after the close of the public comment period.

IV. SCOPE AND ROLE OF THIS RESPONSE ACTION

This action, referred to as OU2, will be the final action for the Site. The RAOs for OU2 are to prevent ingestion and inhalation of Site contaminants in excess of MCLs and to restore groundwater aquifer quality to MCLs. The remedy contained in the 1990 ROD for OU1 and the 2003 ROD Amendment for OU1 provided for an alternate water supply, capping the landfill area, and institutional controls, among other things. The alternate water supply was completed by EPA in 1998 with 45 residences being connected to the HBBA public water system. The landfill cover system is currently under construction by the PRP Group and is scheduled for completion in the Spring of 2006.

Expansion of the HBBA water system provided a permanent source of safe drinking water to residents who may have been impacted by the Site. The ET cover system, once operational, will prevent direct contact with waste materials and reduce infiltration of precipitation, which will reduce the concentration and volume of leachate constituents entering the groundwater. A GMP is required as part of the landfill cover system remedy and is currently being performed. The GMP provides a groundwater monitoring program and schedule to establish baseline groundwater quality conditions at the Site and to evaluate the performance of the ET cover system. Groundwater sampling performed under the GMP is conducted on a semi-annual basis, and will continue through at least the first Five-Year Review following construction of the landfill cover system. Twelve (12) monitoring wells are sampled under the GMP and the well locations encompass the landfill. All samples are analyzed for TCL VOCs, TCL SVOCs, TAL total and dissolved inorganics, TCL pesticides, and PCBs.

Also required under the landfill cover system remedy are institutional controls for the Site. Following construction of the ET cover system, deed notices will be placed on all properties on which the ET cover system is placed. The deed notices will provide notice of the

landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater. The deed notice will be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area.

V. SUMMARY OF SITE CHARACTERISTICS/EXTENT OF CONTAMINATION

A. SITE CHARACTERISTICS

1. Site Topography

The topography of the Site area is dominated by Welsh Mountain, a ridge trending northeast-southwest with a range in elevation from about 740 feet to about 965 feet above mean sea level ("MSL"). The Site is situated on the southeastern side of Welsh Mountain. Elevations at the Site range from approximately 880 feet to 920 feet MSL. Areas south of the Site are low-lying, irregular hills and valleys (Figure 1).

2. Surface Water Drainage

Drainage from the Site area flows south-southwest via sheet flow. Measured along the drainage pathway, the nearest receiving surface water body is the West Branch of the Brandywine Creek which is located approximately 5,000 feet south of the southern extent of the Site. No flow channels, intermittent or perennial streams are present between the Site and the West Branch. A total of four ponds are shown on the topographic point of discharge into the West Branch. These ponds are located approximately 1500, 2100, 2500, and 4000 feet from the Site (Ponds A, B, C, and D, respectively). However, based on the topography depicted, only Pond B lies within a direct probable flow path.

Drainage patterns in the immediate vicinity of the Site have been modified by former Site operations. The landfill area is roughly L-shaped, with the base running parallel to Welsh Mountain. Topographic highs are located in the southwestern portion of the Site. Surface water drainage from the Site is generally radial from this area; however, onsite flow may be focused along roadways.

Offsite drainage from areas immediately north of the Site appears to accumulate in the hook of the "L-shaped" landfill. This area also appears to receive runoff from portions of the Site. Runoff from the surface of the landfill tends to flow along the perimeter of the landfill. Runoff is generally channelled along the northern side of the access road which runs south of the Site. In the vicinity immediately north of monitoring well MW-3, where an access road from the Site intersects with that running south of the Site, runoff flows from this intersection area to the south-southwest where it follows the natural topography.

3. Geology

The bedrock encountered at the Welsh Road Landfill is comprised of Granodiorite Gneiss and the Chickies Quartzite (and its basal Hellam Conglomerate Member). Groundwater occurs in and moves through these rocks in fractures. Additionally, south of the Site, groundwater occurs in saprolites of the two units. Groundwater movement within the saprolites probably occurs within the remnant bedrock fractures at depth and in pore spaces nearer the surface.

The Granodiorite Gneiss is Precambrian in age and nonconformably lies below the Hellam Conglomerate in the Site area. This unit is medium grained, light pink to greenish gray; largely quartz, feldspar and mica; commonly gneissic, containing alteration minerals; having interfingers with gabbronic gneiss.

The Cambrian Chickies Quartzite is a vitreous to granular quartzite that contains interbedded quartzose schist and ranges from massive to thin bedded. This formation is light gray, hard, interbedded, dark slate near the top. The thickness of this formation is estimated to be about 500-1000 feet. Based on discussions with personnel from the nearby quarry, phyllite/kaolinite beds comprise approximately 5 percent of the Upper Chickies. The largest clay beds are found near the upper section of the formation.

The basal Hellam Conglomerate Member varies in character and contains conglomerate, sandstone, arkosic schist, black mica schist, blue quartz grains, and fledspar fragments. The thickness of this member in Chester County is about 50 feet and it may be 200 to 400 feet thick at Welsh Mountain.

4. Soils

Two soil series have been mapped in the immediate Site area. Clymer series soils have been identified in those portions of the Site that are located in Lancaster County. Soils in the area of the Site in Chester County have been mapped as Edgemont Series Soils.

The permeability of the Clymer Series soils is moderate (0.6 to 2.0 inches/hour) in the subsoil and substratum; the available water capacity is moderate (3.3 to 5.2 inches/inch) to high (greater than 5.2 inches/inch). Runoff is medium. The permeability of the Edgemont series is moderately rapid (2.0 to 6.2 inches/hr) in the upper horizons and moderate (0.63 to 2.0 inches/hr) in the subsoil and substratum; the available moisture capacity is very low (0.18) inches/inch).

5. Land Use and Water Supply

Land use in the area of the Site is primarily agricultural and rural residential. Small wood lots, cropland, and pastures are present south of the landfill. The areas east/southeast, north, and west/southwest are wooded with a low density residential population. The nearest population center, Honey Brook, is located approximately 1.25 miles south of the Site. All homes in the

vicinity of the Site are connected to the HBBA public water system. Those residents were connected to the HBBA system in 1998 under EPA's Record of Decision for OU1.

B. EXTENT OF CONTAMINATION

In November 1992, EPA completed a FGS for the Site. The FGS investigated the presence and movement of groundwater contaminants in Site monitoring wells and residential wells. The FGS confirmed the conclusions of the 1988 RI Report that various organic and inorganic constituents were present in wells in the vicinity of the Site. The primary sources of the contamination found during the FGS were fuel-related liquids, chemical solvents, and cleaners. At the time of the FGS, only one organic compound, benzene, exceeded the applicable MCL in the monitoring wells. Monitoring well DER-2 contained the highest concentration of benzene, which has an MCL of 5 parts per billion ("ppb"), at 11.8 ppb. In addition, only one organic compound, vinyl chloride, exceeded the MCL in the residential wells. Vinyl chloride was detected at 4 ppb in a single residential well. The MCL for vinyl chloride is 2 ppb. MCLs for four (4) inorganic compounds, mercury, lead, beryllium, and nickel, were exceeded in samples obtained from the on-Site monitoring wells, and MCLs were exceeded in residential wells for the inorganic constituents, mercury and copper.

In general, the FGS confirmed that groundwater occurrence and movement is dominated by fracture flow. At shallow depths in the aquifer, groundwater appears to flow radially from the landfill center, with the largest gradient to the southeast and the smallest gradient to the north. At deeper depths, the groundwater flows south-southeast from the Site, and in the western section of the Site it flows west. Groundwater discharges to the surface beginning at approximately 1,500 feet south of the Site, as indicated by springs, ponds, and saturated soils within the valley. The horizontal extent of contamination was primarily focused in the area immediately adjacent to the landfill. This area extends 200 to 300 feet from the landfill. The vertical extent of Site-related contamination was reported to be significant, based on concentrations of chlorofluorocarbons ("CFCs") detected at a depth of 220 feet below ground surface in monitoring well EPA-5.

The FGS provided a comparison between the 1993 groundwater quality data and groundwater data from previous investigations. The comparison indicated a consistent, significant improvement to groundwater quality over time. For example, total VOCs detected in residential wells decreased from 204 ppb in 1984 to 141 ppb in 1987 to 66 ppb in 1992. Also, an overall decrease in lead and mercury concentrations was observed between 1987 and 1992.

EPA conducted additional groundwater monitoring events in 1999 and 2002 to supplement the 1992 FGS. During these events, only groundwater monitoring wells could be sampled since residential wells were abandoned when the public water system was constructed in 1998. Two separate groundwater monitoring events were performed in April and July 1999. Six COCs, antimony, beryllium, lead, mercury, nickel, and benzene, were detected at concentrations

exceeding the MCLs in 1992. Only lead, mercury, and benzene were detected at concentrations exceeding their respective MCLs in April 1999. Mercury and benzene were the only compounds detected at concentrations above their respective MCLs in July 1999. The results of the May 2002 groundwater monitoring event indicated only total arsenic detected at concentrations above the MCL. At that time, the MCL for arsenic was 50 ppb. Monitoring well EPA-2 had a total concentration of 56 ppb and a corresponding filtered arsenic concentration of 47 ppb.

The PRP Group conducted the first semi-annual groundwater monitoring event in June 2005. This monitoring event was performed in accordance with the EPA-approved GMP (April 2005) for the Site. Results of the June 2005 sampling event indicate groundwater concentrations exceeding MCLs for arsenic, barium, and thallium. Total and dissolved arsenic was detected in monitoring wells EPA-2 and EPA-2A. The concentrations of total and dissolved arsenic in EPA-2 and EPA-2A were approximately 30 ppb and 17 ppb, respectively, each concentration slightly higher than the soon to be promulgated MCL of 10 ppb. Barium concentrations exceeding the MCL of 2 ppb were observed only in well EPA-4A. The concentration of barium observed in EPA-4A was slightly greater than that observed in the 2002 sampling event (2.51 ppm versus 1.63 ppm total barium in 2002). Barium was detected at lower concentrations (i.e., below the MCL) in all other Site monitoring wells sampled during the June 2005 sampling event. Thallium concentrations exceeding the MCL of 2 ppb were observed in samples collected from monitoring wells EPA-4, EPA-4A, and EPA-5A, ranging from 25 ppb in EPA-4A to an estimated concentration fo 16.7 ppb in EPA-5A (total concentrations).

Based on the groundwater quality data available, organic and inorganic constituents have occasionally been detected in groundwater at the Site and in the vicinity of the Site. The locations where constituents were detected are generally limited to the area immediately surrounding the Site (within 200 to 300 feet of the landfill). The analysis of the data indicates that historic groundwater contaminant levels have all decreased to levels below their respective MCLs, with the exception of arsenic in monitoring wells EPA-2 and EPA-2A, and thallium in EPA-4A and EPA-5A. The higher levels of arsenic are attributed to leachate generated from the landfill and to reducing conditions caused by landfill decay. Under reducing conditions, natural arsenic minerals become more mobile in the groundwater. In September 2005, the PRP Group began construction of the ET cover system and it is planned to be completed in the Spring of 2006. The purpose of this cover system is to reduce infiltration of precipitation through the landfill which will thereby reduce the amount of leachate produced from the Site area and enable the groundwater to be restored to its natural conditions.

Comparisons of the historical groundwater data with the results of recent groundwater sampling data indicate a marked, overall improvement in groundwater quality in the area (see Table 1). As a result, the contaminant plume has substantially reduced from the estimate in the 1993 FFS. At that time, the plume's edge was defined as being 500 feet from the monitoring wells located furthest from the Site. The edge of the plume is now approximately 200 to 300 feet beyond the perimeter of the landfill. Also, recent groundwater sampling data is consistent with the predicted natural attenuation times found in the 1993 FFS. At that time, it was anticipated

that groundwater from wells in the contaminant plume would achieve restoration to MCLs in less than five (5) years. It should be noted that the reason arsenic has not reached its MCL is due to the revision of the MCL from 50 ppb to 10 ppb (effective 1/26/2006).

VI. CURRENT AND POTENTIAL FUTURE LAND AND WATER USES

The Site is located on approximately seven acres, near the top of Welsh Mountain in Honey Brook and Caernarvon Townships. The Site is bounded on the north by Welsh Road, approximately 200 feet east from the intersection of Welsh Road with PA Route 10. The Site is vacant and the surface of the landfill area is clear of debris and free of vegetation. A gravel access road is located along the western and southern borders of the landfill property. A fifty-foot power line/utility right-of-way also lies along the southern portion of the boundary of the Site.

Land use in the area of the Site is primarily agricultural and rural residential. Small wood lots, cropland and pastures are present south of the landfill. The areas east/southeast, north, and west/southwest are wooded with a low density residential population. The nearest population center, Honey Brook, is located approximately 1.25 miles south of the Site.

Future land use will in all likelihood remain the same as the current land use. The landfill area of the Site will be capped with an ET cover system. The ET cover system consists of a soil cover with densely planted hybrid poplar trees and shallow rooting vegetation. Use of the land will be limited by the ET cover system. Deed notices will be placed on all properties on which the ET cover system is located to notify future potential purchasers of the properties of the restrictions on the future use and development of the properties, and restrictions on the use of groundwater.

Future groundwater use will in all likelihood remain the same as the current groundwater use. Currently, groundwater in the vicinity of the Site is not used as a potable water source. All homes in the surrounding area of the landfill are served by a public water system with the exception of the Site owner, who lives directly across the street from the Site. There is also a local ordinance in place which requires mandatory connection to the public water system and which prohibits drilling of additional water supply wells. The beneficial use of the aquifer is a potential drinking water source.

VII. SUMMARY OF SITE RISKS

EPA has established a number of criteria to estimate the potential risk to human health and the environment due to contamination at and from a site. For this Site, a Baseline Risk Assessment limited only to groundwater pathways was conducted in 1993 since OU2 focuses on groundwater contamination. Risks were calculated based on inhalation, ingestion, and dermal

contact of groundwater from both residential and monitoring wells at the Site. The risk calculation was based on the levels of contaminants found during the course of the 1992 FGS. Separate calculations were made for those that cause cancer (carcinogens) and for those that cause non-carcinogenic health effects, including current and future risk. The 1993 Risk Assessment did not take into account the fact that nearby residents are connected to public water. EPA has also established criteria for drinking water called MCLs. These are concentration levels promulgated pursuant to the Safe Drinking Water Act, 42 U.S.C. § 300f et seq., for various contaminants below which drinking water is considered safe.

There were both VOCs and inorganic compounds of concern at the Walsh Landfill. The major VOCs contributing to risk were benzene and vinyl chloride. Inorganic contaminants such as antimony, arsenic, beryllium, copper, and manganese were the significant sources of risk in both residential and monitoring wells.

Potential human health problems are identified by the risk level and hazard index. Potential carcinogenic risks are identified by the risk level of 1×10^{-6}, which indicates one additional chance in 1,000,000 that an individual will develop cancer above the expected normal rate of approximately 250,000 in 1,000,000. The hazard index identifies the potential for the most sensitive individuals to be adversely affected by non-carcinogenic chemicals. If the hazard index exceeds one (1.0), there may be a concern for potential non-carcinogenic effects. As a rule, the greater the value of the hazard index above 1.0, the greater the level of concern. Changes in the hazard index, however, must be one or more orders of magnitude (e.g., 10 times greater) to be significant.

The 1993 Risk Assessment can be summarized as follows:

Groundwater use from nearby residential wells includes both current and future resident off-Site scenarios. Increased cancer risks are in the range of 1 in 10,000 (1×10^{-4}). This risk is driven by arsenic, beryllium, vinyl chloride, and benzene. Non-carcinogenic risks due to the ingestion of inorganic contaminants by children were calculated to have a hazard index as high as 15. Antimony, arsenic, copper, and manganese were the most significant sources contributing to the non-carcinogenic risk.

The groundwater from the monitoring wells at the Site is not used as a potable water source. Under the scenario where a future on-Site resident would utilize this groundwater as a potable water supply, its use would represent an increased cancer risk of 1 in 10,000 due to arsenic. The non-carcinogenic health risks for inorganics and organics were also calculated to be a maximum hazard index of 291 and 2.13, respectively. Inorganic contaminants such as arsenic and manganese were the most significant sources.

It is important to note that the current risk is based on a theoretical human in a theoretical circumstance. For this ROD, the 1993 Risk Assessment calculations were not updated with recent groundwater monitoring data and the 1993 Risk Assessment does not take into account

that all residences in the vicinity of the Site are connected to public water. This information, coupled with the fact that concentrations of contaminants have been declining over time, produces an overly conservative risk estimate. In addition, risk was not calculated for the vapor intrusion pathway. Although quantitative calculations were not performed for this pathway, very low VOC concentrations in groundwater (less than MCLs and consistently declining) indicate that vapor intrusion does not pose a threat to residential receptors. Consequently, the results of recent sampling have been compared to the MCLs which are established "safe" levels for specific contaminants. With the exception of arsenic, overall results of the monitoring data demonstrate that the concentrations of contaminants in the groundwater have decreased over time and are at or below MCLs.

VIII. REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives ("RAOs") drive the formulation and development of response actions. The RAOs for OU2 have been based on the results of the FGS and subsequent groundwater monitoring events, the Baseline Risk Assessment, and acceptable contaminant levels. As a result, the RAOs for OU2 are to:

1. Prevent the ingestion of groundwater containing site-related contaminants of concern in excess of MCLs;

2. Prevent the inhalation of volatile organic compounds in the groundwater at unacceptable cumulative chronic hazards or carcinogenic index values; and,

3. Restore the local groundwater aquifer quality to MCLs for all site-related contaminants of concern.

IX. DESCRIPTION OF ALTERNATIVES

In accordance with Section 300.430(e)(9) of the NCP, 40 C.F.R. § 300.430(e)(9), remedial response actions were identified and screened for effectiveness, implementability, and cost during the 1993 Focused Feasibility Study to meet the remedial action objectives for the Site. The technologies that passed the screening were developed into remedial alternatives. EPA assessed those alternatives against the nine criteria specified in the NCP at 40 C.F.R. § 300.430(e)(9)(iii). In addition, EPA evaluated the No Action Alternative as required by the NCP. These alternatives are presented and discussed below. All projected costs provided for the alternatives are estimates from the 1993 Focused Feasibility Report.

Alternative 1 **No Action**

Alternative 1 consists of no remedial actions, and is included to provide a basis upon which other alternatives can be compared. This alternative is required by the NCP and CERCLA to provide a baseline for comparison of risk reduction achieved by other alternatives.

Under this alternative, no action would be implemented to remove, remediate, contain, or otherwise address groundwater at the Site. This alternative is presented, as required by CERCLA and the NCP, as a baseline alternative for comparison purposes.

Capital Costs:	$0
Annual O&M Costs:	$0
Present Worth Cost:	$0

Alternative 2 **Groundwater Monitoring and Institutional Controls**

Alternative 2 consists of groundwater monitoring and institutional controls to restrict future groundwater use at the Site. Under this alternative, no further remedial actions beyond OU1 will be taken at the Site. The groundwater monitoring required for the ET cover system under the OU1 ROD Amendment (July 2003) will be used to monitor trends and evaluate groundwater quality at the Site. In April 2005, EPA approved a PRP-prepared Groundwater Monitoring Plan ("GMP") for the OU1 remedy. The GMP describes the location, frequency, procedures, and analytical requirements for the groundwater monitoring program that will be employed at the Site.

Under the GMP, two baseline groundwater sampling events were conducted in 2005, prior to construction of the ET cover system. Groundwater sampling will continue to be conducted on a semi-annual basis during the second and fourth quarters of each year, beginning in the second quarter of 2006. A total of twelve (12) monitoring wells will be sampled for TCL VOCs, TCL SVOCs, TAL total and dissolved inorganics, and TCL pesticides, and PCBs. The specific monitoring wells to be sampled under the GMP include: MW-3, MW-5, MW-7, MW-BH, EPA-2, EPA-2A, EPA-3, EPA-4, EPA-4A, EPA-5, EPA-5A, and EPA-6.

The groundwater performance standards for OU2 will be evaluated at the same time the ET cover system is evaluated. This evaluation will be made during the Five-Year Review, but not less than five (5) years after EPA acceptance of the Interim RA Report for OU1. Any approved changes or modifications made to the GMP during implementation of the OU1 remedy shall be applicable to the OU2 remedy.

In addition, the OU1 cap remedy requires that deed notices which provide notice of the landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater, be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. The deed notices will be placed on all properties on which the ET cover system is located after construction is complete.

Capital Costs:	$26,000
Annual O&M Costs:	$281,680

Present Worth Cost: $1,441,370

Alternative 3 **Groundwater Collection, Precipitation/Flocculation Contingency, Air Stripping Contingency, Discharge to Local Surface Water, Groundwater Monitoring, and Institutional Controls**

The components of this alternative consist of: the groundwater monitoring and institutional controls discussed under Alternative 2; collection of contaminated groundwater by extraction wells; a contingency to treat groundwater by precipitation for metals; a contingency to treat groundwater by air stripping for volatile organics; and discharge of the treated groundwater to a local surface water body.

This alternative includes the construction of four (4) deep extraction wells. Two (2) wells would be positioned in the area downgradient of monitoring wells DER-2, EPA-2, and EPA-3 and two (2) wells would be positioned in the northwest corner of the Site. The effluent would then be discharged via the stormwater drainage system constructed as part of the landfill cap remedy under OU1. The effluent is expected to ultimately discharge to a drainage ditch located 2,000 feet south of the Site.

As the concentration of contaminants in the aquifer are relatively low, blending the groundwater from the four (4) extraction wells should be sufficient to meet the standards of the proposed stormwater drainage system. However, should treatment of the groundwater be necessary, this alternative includes contingencies for treatment of metal and volatile organic contaminants. The contaminated groundwater would initially be treated for metals at an on-Site facility consisting of initial precipitation, flocculation, and sedimentation treatment for metals. Air stripping has been included to remove any volatiles not evaporated during the rapid mixing in the precipitation process. Treatment facilities for metals and organics, if needed, could not be located "on-Site" since there will be no additional land available after construction of the landfill cap remedial action. The holding tank and treatment facilities would have to be located on properties to the south of the landfill.

Capital Costs:	$351,580 to $1,097,400
Annual O&M Costs:	$162,758 to $672,871
Present Worth Cost:	$1,812,992 to $5,226,970

Alternative 4 **Groundwater Collection, Precipitation/Flocculation Contingency, Air Stripping Contingency, Discharge to POTW, Groundwater Monitoring, and Institutional Controls**

The components of this alternative consist of: the groundwater monitoring and institutional controls discussed under Alternative 2; collection of contaminated groundwater by extraction wells; a contingency to treat groundwater by precipitation for metals; a contingency to

treat groundwater by air stripping for volatile organics; and discharge of the treated groundwater to the local publicly-owned treatment works ("POTW").

This alternative is similar to Alternative 3, except that the effluent would be discharged to the Conestoga Pumping Station of the Honey Brook Water Authority. An advantage of this method of disposal is that the majority of the Site contaminants are well within the toxic substance discharge limitations for the POTW. However, barium, beryllium, copper, lead, manganese, and xylene may be in excess of permissible concentrations. The precipitation/flocculation contingency for the treatment of metals and an air stripping contingency for the treatment of xylene should be sufficient to pre-treat the groundwater for the POTW.

Capital Costs:	$804,450 to $1,550,000
Annual O&M Costs:	$402,520 to $1,192,632
Present Worth Cost:	$4,568,210 to $9,844,520

Alternative 5 **Groundwater Collection, Precipitation/Flocculation Contingency, Carbon Adsorption Contingency, Discharge to Local Surface Water, Groundwater Monitoring, and Institutional Controls**

The components of this alternative consist of: the groundwater monitoring and institutional controls discussed under Alternative 2; collection of contaminated groundwater by extraction wells; a contingency to treat groundwater by precipitation for metals; a contingency to treat groundwater by carbon adsorption for volatile organics; and discharge of the treated groundwater to the local surface water.

This alternative is similar to Alternative 3, except that carbon adsorption would be used to treat the organic contaminants which would treat a wider range of organics. As discussed in Alternative 3, the effluent would then be discharged via the stormwater drainage system constructed as part of the landfill cap remedy under OU1.

Capital Costs:	$351,580 to $1,185,750
Annual O&M Costs:	$162,758 to $957,982
Present Worth Cost:	$7,588,750

Alternative 6 **Groundwater Collection, Precipitation/Flocculation Contingency, Carbon Adsorption Contingency, Discharge to POTW, Groundwater Monitoring, and Institutional Controls**

The components of this alternative consist of: the groundwater monitoring and institutional controls discussed under Alternative 2; collection of contaminated groundwater by extraction wells; a contingency to treat groundwater by precipitation for metals; a contingency to

treat groundwater by carbon adsorption for volatile organics; and discharge of the treated groundwater to the local POTW.

This alternative is similar to Alternative 4, except that carbon adsorption would be used to treat the organic contaminants which would treat a wider range of organics. As discussed in Alternative 4, the effluent would then be discharged to the Conestoga Pumping Station of the Honey Brook Water Authority.

Capital Costs:	$804,450 to $1,638,750
Annual O&M Costs:	$402,520 to $1,196,343
Present Worth Cost:	$9,962,605

X. COMPARATIVE ANALYSIS OF ALTERNATIVES

The alternatives discussed above were compared on the basis of the nine criteria set forth in the NCP at 40 C.F.R. § 300.430(e)(9)(iii) in order to select a remedy for the Site. These nine criteria are categorized according to three groups; threshold criteria; primary balancing criteria; and modifying criteria. These evaluation criteria relate directly to the requirements in Section 121 of CERCLA, 42 U.S.C. § 9621, which determine the overall feasibility and acceptability of the remedy.

Threshold criteria must be satisfied in order for a remedy to be eligible for selection. Primary balancing criteria are used to weigh major trade-offs among remedies. State and community acceptance are modifying criteria formally taken into account after public comment is received on the Proposed Plan. The criteria are as follows:

Threshold Criteria
- Overall Protection of Human Health and the Environment
- Compliance with Applicable or Relevant and Appropriate Requirements ("ARARs")

Primary Balancing Criteria
- Long-term Effectiveness
- Reduction of Toxicity, Mobility, or Volume through Treatment
- Short-term Effectiveness
- Implementability
- Cost

Modifying Criteria:
- State Acceptance
- Community Acceptance

A summary of each of the criteria is presented below, followed by a summary of the

relative performance of the alternatives with respect to each of the nine criteria. These summaries provide the basis for determining which alternative provides the "best balance" of trade-offs with respect to the nine criteria.

Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, and/or institutional controls. All of the alternatives, except the "no action" alternative (Alternative 1), would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment, engineering controls, and/or institutional controls. Alternative 2 provides protection of human health and the environment by relying on remedial actions taken under OU1, by monitoring the groundwater, and by establishing institutional controls for the affected properties to restrict groundwater usage at the Site. Remedial actions taken under OU1 include the construction of an alternate water supply system to serve those residents near the Site and the installation of an ET cover system. Construction of the alternate water supply system was completed in May 1998. The ET cover system is planned to be completed in 2006. The cover system is designed to reduce infiltration through the landfill. This will reduce the amount of leachate produced from the Site area and enable the groundwater to be restored to its natural conditions.

Following the construction of the ET cover system, deed notices will be placed on all properties on which the ET cover system is placed. The deed notices will provide notice of the landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater. The deed notices will be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. In addition, there are currently established controls for water wells and water supplies in Chester County. The Chester County Health Department promulgated Chapter 500 of their Rules and Regulations to establish minimum standards for quality, quantity, location, construction, alteration, or abandonment of water wells and water well installations. The Rules and Regulations also require a permit for the construction of a water supply well.

Alternatives 3 through 6 also provide protection of human health and the environment. In these alternatives, groundwater would be extracted from the aquifer and treated, if necessary, until MCLs of all COCs are reached. Alternatives 3 through 6 may reduce theoretical exposure to risks more quickly than Alternative 2 by actively extracting the groundwater, but Site factors, such as the presence of fractured bedrock, make it difficult to quantify how much (if at all) more protective Alternatives 3 though 6 would be.

Because the "no action" alternative does not meet this threshold criteria, it will not be considered further in this analysis of alternatives.

Compliance with Applicable or Relevant and Appropriate Requirements ("ARARs")

Section 121(d) of CERCLA and NCP §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs", unless such ARARs are waived under CERCLA Section 121(d)(4). Although PADEP has not identified the State's ARARs for this remedy, EPA has attempted to do so.

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be applicable.

Relevant and appropriate requirements are those cleanup standards, standards of control, or other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking a waiver. EPA is not waiving any ARARs for OU2 at this Site.

A. Identification of ARARs

ARARs are generally divided into three categories: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs provide guidance on acceptable or permissible contaminant concentrations in soil, air, and water. Location-specific ARARs govern activities in critical environments such as floodplains, wetlands, endangered species habitats, or historically significant areas, while action-specific ARARs are technology or activity-based requirements.

1. Chemical-Specific ARARs

PADEP identifies the Land Recycling and Environmental Remediation Standards Act, 35 P.S. 6026.101 et seq. (July 18, 1995) ("Act 2"), as an Applicable or Relevant and Appropriate Requirement ("ARAR") for groundwater cleanups in the Commonwealth. EPA has determined that Act 2 does not, on the facts and circumstances of this remedy, impose any requirements more stringent than the federal standards set forth in Section 300g-1 of the Safe Drinking Water Act ("SDWA"), 42 U.S.C. Section § 300g-1, and its implementing regulations at 40 C.F.R. Part

141. The SDWA provides standards for the regulation of contaminants in all surface or ground waters utilized as potable water supplies and provides enforceable standards for specific contaminants found in water supplies. Accordingly, groundwater cleanup MCLs and non-zero MCLGs, as set forth in accordance with the SDWA, are relevant and appropriate requirements for Alternatives 2 through 6 because they set forth the clean up levels for the COCs at the Site.

The Pennsylvania Water Quality Standards (25 PA Code § 93.1-9z) set forth water quality standards for waters of the Commonwealth. The standards are based upon water uses that are to be protected and that are considered by PADEP in its regulation of discharges to surface waters. These standards would be applicable to point or non-point discharges from the Site and would be an ARAR for Alternatives 3 and 5 because these Alternatives include treatment of groundwater and then discharge of the treated groundwater to a local surface water body.

2. Location-Specific ARARs

The Delaware River Basin Commission ("DRBC") has established water quality standards, the Ground Water Protected Area Regulations (18 C.F.R. §§ 430.7, 430.9, 430.11, and 430.15-430.23) based on anti-degradation of existing water quality. The standards are concerned with natural conditions in waters considered by the DRBC to have exceptionally high scenic, recreational, ecological, and/or water supply values. These regulations establish requirements for the extraction and discharge of groundwater within the Delaware River Basin and would be an ARAR for Alternatives 3 through 6 because all of these Alternatives include extraction of groundwater for treatment and the Site lies within the Delaware River Basin. In addition, Alternatives 3 and 5 include discharge of the treated groundwater to a local surface water body.

A Memorandum of Agreement ("MOA") between DRBC and EPA Region III (October 23, 1991) establishes standards for discharges to surface water and withdrawals from aquifers in the Delaware River Basin. Under this MOA, the DRBC does not review or require permits for groundwater withdrawal or recharge for federal Superfund sites in EPA Region III. However, the MOA does require that groundwater withdrawals meet the following four conditions taken from the DRBC Ground Water Protected Area Regulations:

1) Extraction wells must have readily accessible capped ports and drop pipes so that water levels may be measured under all conditions.
2) Extraction wells shall be metered with an automatic continuous recording device that measures flow within 5% of actual flow. A daily record shall be maintained and monthly totals shall be reported to DRBC.
3) Extraction wells shall not significantly interfere with domestic or other existing wells.
4) The operation of extraction wells shall not cause long-term progressive lowering of ground water levels, permanent loss of storage capacity, or substantial impact on low flows of perennial streams.

The MOA establishes standards for discharges to surface water and withdrawals from aquifers in

the Delaware River Basin and would be an ARAR for Alternatives 3 through 6 because all of these Alternatives include extraction of groundwater for treatment and the Site lies within the Delaware River Basin. In addition, Alternatives 3 and 5 include discharge of the treated groundwater to a local surface water body.

3. Action-Specific ARARs

The Resource Conservation and Recovery Act ("RCRA"), as amended, 42 U.S.C. §§ 6901 et, seq., addresses the treatment and disposal methods for all hazardous wastes. RCRA authorizes states to administer and enforce the RCRA hazardous waste program by obtaining final authorization from EPA. Any wastes generated during the treatment of contaminated groundwater at the Site under Alternatives 3 through 6 would have to be handled in accordance with the EPA-authorized Pennsylvania Hazardous Waste Regulations at 25 PA Code Chapters 261a. (relating to hazardous waste determination and identification numbers), 262a (relating to manifest requirements for off-site shipment of wastes and pre-transport requirements), 263a. (relating to transporting requirements), and 268a (relating to Land Disposal Restrictions for specific hazardous wastes). Determination of the presence and appropriate waste code for any hazardous wastes or residual waste generated at the Site from the treatment of groundwater would be made in accordance with these regulations.

The Clean Air Act ("CAA"), 42 U.S.C. §§ 7401 et. seq., sets requirements for the reduction and prevention of air pollution in order to enhance the quality of air resources. The CAA authorizes states to administer and enforce the CAA by obtaining final approval of the State Implementation Plan from EPA. The treatment of contaminated groundwater at the Site by air stripping under Alternatives 3 and 4 would have to be performed in accordance with the EPA-approved Pennsylvania Regulations at 25 PA Code Chapters 122 (which regulates the construction or modification of stationary sources and provides standards of performance for new stationary sources), 124 (which sets emission standards for hazardous air pollutants), and 127 (which requires that all new air emission sources achieve minimum attainable emissions using the best available technology) .

Long-Term Effectiveness and Permanance

Long-term effectiveness and permanence refers to the expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up levels have been met. This criterion includes the consideration of residual risk that will remain on-site following the remediation and the adequacy and reliability of controls.

Alternatives 2 through 6 would provide essentially equal levels of long-term effectiveness and permanence by reducing the concentrations of contaminants in groundwater. The difference between the alternatives with regard to the long-term effectiveness and permanence is directly related to how each alternative addresses groundwater contamination at the Site (i.e., remedial actions taken under OU1 plus groundwater monitoring and institutional controls (Alternative 2) or active groundwater extraction and treatment (Alternatives 3 through 6)). Alternatives 3 through 6

have the potential to meet MCLs marginally faster than Alternative 2 because they are active cleanup processes. The cleanup time for groundwater at this Site, however, is not crucial, because residents impacted by contaminated groundwater have been connected to a water line and the existing and proposed institutional controls will prevent further contact with contaminated groundwater. It is also difficult to predict how effective Alternatives 3 through 6 would be in removing contaminants from the groundwater because of the presence of fractured bedrock beneath the Site.

During and upon completion of Alternatives 3 through 6, groundwater extraction and treatment, residual waste in the form of sludge or spent carbon and sediment in the bottom of the equalization tank would need to be managed. No such residual waste would be generated in Alternative 2.

Reduction of Toxicity, Mobility, or Volume through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy. Extraction and treatment of the groundwater as proposed under Alternatives 3 through 6 may reduce the contaminant levels in the groundwater but the treatment processes result in the transfer of these contaminants to sludges or spent carbon filters.

Alternative 2 does not involve treatment. Instead, it relies on the remedial actions performed under the 1990 ROD and the 2003 ROD Amendment for OU1 to reduce the toxicity and mobility of the contaminants present in groundwater. The ET landfill cover system remedy for OU1 is designed to severely limit infiltration, thereby reducing leachate and contaminant concentrations. A groundwater monitoring plan is in place and is currently being implemented to document groundwater quality conditions at the Site and to evaluate the performance of the system. The volume of the contamination will also be reduced by the implementation of the OU1 remedy and the attenuation processes.

Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during construction and operation of the remedy until cleanup levels are achieved.

Alternatives 2 through 6 are protective in the short-term because residents have been connected to public water and institutional controls implemented under OU1 would prevent exposure to contaminated groundwater.

No construction would be required for Alternative 2. Sampling activities for Alternatives 2 through 6, and materials/sludge/waste handling procedures for Alternatives 3 through 6 would be conducted by trained personnel using proper protective equipment. No short-term impacts to workers or the public would be associated with implementation of these alternatives.

The construction associated with implementation of Alternatives 3 through 6 is minimal, and would not have short-term impacts beyond those of any construction project.

Air emissions from the groundwater treatment process under Alternatives 3 and 4 would be addressed by engineering controls to insure that emissions meet the air emissions standards of the Clean Air Act, 42 U.S.C. §§ 7401 et seq., and the air pollution regulations of 25 PA Code § 127.1 et seq., mitigating any adverse on- or off-Site impacts.

Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternative 2, the groundwater monitoring and institutional controls remedy, would not require any construction and is easily implemented. As discussed previously, deed notices will be put in place for all properties associated with the landfill upon completion of the ET cover system under the 2003 ROD Amendment for OU1 to provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. Alternative 2 also requires a groundwater monitoring well network which is already in place and being monitored under OU1 activities.

Alternatives 3 through 6 can also be easily implemented. Alternatives 3 and 5 would require a discharge permit for surface water. Alternatives 4 and 6 would require the approval of the local POTW. The discharge of the groundwater to a surface water body as proposed in Alternatives 3 and 5 could increase the size of a nearby wetland which could impact the local ecosystem.

Cost

The cost for implementing Alternative 2, groundwater monitoring and institutional controls, is much less than the extraction and treatment of groundwater under Alternatives 3 through 6. Because there is no measure of assurance that Alternatives 3 through 6 would be more effective than Alternative 2, the cost difference is not justified. Alternative 2 is a cost-effective alternative that will prevent exposure to contaminated groundwater while remedial actions taken under OU1 enhance the attenuation of groundwater contaminant concentrations.

State Acceptance

EPA, as the lead agency for this Site, selects the remedy in consultation with the State. In a letter dated January 10, 2006, PADEP stated that it does not concur with the Selected Remedy. While PADEP is in general agreement with the action proposed, the basis for their technical non-concurrence are the deficiencies associated with the evaluation of the effectiveness of the remedy

against expected remediation time frames and their concerns regarding the effectiveness of the remedy for OU1.

Community Acceptance

A public meeting on the Proposed Plan was held on September 8, 2005, at the Honey Brook Township Municipal building. Only one member of the local community was in attendance. There were no verbal or written comments given at the public meeting and the only written comments received by EPA were provided on behalf of the PRP Group after the public comment period ended. EPA addresses those comments in the Responsiveness Summary of this ROD.

XI. PRINCIPAL THREAT WASTES

There have been no principal threat wastes, as defined by the NCP, identified for the groundwater at the Site.

XII. SELECTED REMEDY

Summary of the Rationale for the Selected Remedy

EPA, in consultation with PADEP, has selected Alternative 2, Groundwater Monitoring and Institutional Controls, as the remedy for OU2. The selected remedy meets the criteria of overall protection of human health and the environment and compliance with ARARs. In addition, Alternative 2 provides the best balance of the remaining criteria.

Description of the Selected Remedy

Alternative 2 consists of groundwater monitoring and institutional controls to restrict future groundwater use at the Site. Under this alternative, no further remedial actions beyond those required by the 1990 ROD and the 2003 ROD Amendment for OU1 will be taken at the Site. The groundwater monitoring required for the ET cover system under the OU1 ROD Amendment (July 2003) will be used to monitor trends and evaluate groundwater quality at the Site. In April 2005, EPA approved a PRP-prepared Groundwater Monitoring Plan ("GMP") for the OU1 remedy. The GMP describes the location, frequency, procedures, and analytical requirements for the groundwater monitoring program that will be employed at the Site.

Under the GMP, two baseline groundwater sampling events were conducted in 2005, prior to construction of the ET cover system. Groundwater sampling will continue to be conducted on a semi-annual basis during the second and fourth quarters of each year, beginning in the second quarter of 2006. A total of twelve (12) monitoring wells will be sampled for TCL VOCs, TCL SVOCs, TAL total and dissolved inorganics, and TCL pesticides, and PCBs. The specific monitoring wells to be sampled under the GMP include: MW-3, MW-5, MW-7, MW-BH, EPA-2,

EPA-2A, EPA-3, EPA-4, EPA-4A, EPA-5, EPA-5A, and EPA-6. Figure 4 provides the locations of the twelve (12) monitoring well sampling locations at the Site.

The groundwater performance standards for OU2 will be evaluated at the same time that the ET cover system is evaluated. This evaluation will be made during the Five-Year Review, but not less than five (5) years after EPA acceptance of the Interim RA Report for OU1. Any approved changes or modifications made to the GMP during implementation of the OU1 remedy shall be applicable to the OU2 remedy.

If the requirement for groundwater monitoring under the ET cover system no longer becomes necessary, the GMP may be revised or amended as appropriate to continue groundwater sampling if cleanup goals have not been achieved under OU2.

In addition, the OU1 cap remedy requires that deed notices which provide notice of the landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater, be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. The deed notices will be placed on all properties on which the ET cover system is located after construction is complete.

Summary of the Estimated Remedy Costs

The cost estimate provided in the 1993 Focused Feasibility Study Report for Alternative 2 (present worth cost: $1,441,370) does not accurately reflect the cost of implementing this remedy. Since groundwater monitoring and institutional controls are currently being performed by the PRP Group under the OU1 cap remedy, the cost of Alternative 2 has a present worth value of $0.

Expected Outcomes of Selected Remedy

Since Alternative 2 is currently being implemented by the PRP Group under the OU1 cap remedy, there is no anticipated change in use of the impacted groundwater. The institutional controls component of the remedy selected as part of this remedial action, which is also addressed under the OU1 cap remedy, would address any potential use of impacted groundwater. Use of the land is limited by the nature of the ET cover system. Successful completion of the selected remedy in combination with the OU1 cap remedy should result in the restoration of the aquifer to its beneficial use.

Performance Criteria of the Selected Remedy

Under Alternative 2, a groundwater monitoring program is required to monitor trends and to evaluate groundwater quality at the Site. These activities are consistent with the remedial actions already being taken under OU1. Groundwater monitoring data gathered under the EPA-approved GMP (April 2005) would be used to demonstrate the efficacy of the ET cover system and

attenuation processes (i.e., to show that cleanup levels, namely, achieving respective MCLs, are met).

The specific RAOs for OU2 are to prevent ingestion and inhalation of Site contaminants in excess of MCLs and to restore groundwater aquifer quality to MCLs. The COCs for OU2 and their respective cleanup levels, namely their respective MCLs are:

COCs	MCL (ug/l)
Arsenic	10
Barium	2,000
Thallium	2

The groundwater performance standards for OU2 will be evaluated at the same time that the ET cover system is evaluated. This evaluation will be made during the Five-Year Review, but not less than five (5) years after EPA acceptance of the Interim RA Report for OU1. Any approved changes or modifications made to the GMP during implementation of the OU1 remedy shall be applicable to the OU2 remedy. Groundwater monitoring shall continue until EPA, in consultation with the Commonwealth of Pennsylvania, determines that the performance standard for each contaminant of concern can be achieved on a continuing basis.

If implementation of the selected remedy demonstrates, in corroboration with hydrogeological and chemical evidence, that it will be technically impracticable to achieve and maintain the remediation goals throughout the area of attainment, EPA, in consultation with the Commonwealth of Pennsylvania, intends to amend the ROD for OU2 or issue and Explanation of Significant Differences to inform the public of alternative remedies for meeting groundwater goals.

The institutional controls component of the remedy is addressed under the OU1 cap remedy. The OU1 cap remedy requires that deed notices which provide notice of the landfill's presence, notice of the restrictions on future use and development of the properties, and notice of the restrictions on the use of groundwater, be filed in the recorder's office, the registry of deeds, or other appropriate office in the Commonwealth of Pennsylvania. These deed notices will provide notice to potential future purchasers of the properties of the restrictions on the use of the properties and use of groundwater in the area. The deed notices will be placed on all properties on which the ET cover system is located after construction is complete.

XIII. STATUTORY DETERMINATIONS

Pursuant to CERCLA §121 and the NCP, the selected remedy must be protective of human health and the environment, comply with applicable or relevant and appropriate requirements or justify a waiver, be cost-effective, and utilize permanent solutions and alternative treatment

technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal and untreated wastes. The following sections discuss how the Selected Remedy meets these statutory requirements.

A. Protection of Human Health and the Environment

Alternative 2 provides both long-term and short-term protection of human health and the environment, and addresses theoretical exposure risks posed by potential contact with or consumption of contaminated groundwater by reliance on remedial actions taken under OU1, by attenuation processes in groundwater, by monitoring the groundwater, and by implementing institutional controls to prevent exposure to groundwater with levels of contaminants above their respective MCLs.

B. Compliance with Applicable or Relevant and Appropriate Requirements ("ARARs")

The Selected Remedy will comply with all identified ARARs. Section 300g-l of the Safe Drinking Water Act, 42 U.S.C. Section § 300g-1, and its implementing regulations at 40 C.F.R. Part 141, requires that domestic water supplies comply with certain MCLs for listed contaminants. Such drinking water standards are relevant and appropriate requirements for the groundwater that is determined to be a potential future source of drinking water. Implementation of the Selected Remedy will prevent ingestion and inhalation of Site contaminants in excess of MCLs and will restore groundwater aquifer quality to MCLs.

C. Cost-Effectiveness

The Selected Remedy is cost-effective. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP §300.430 (f) (1) (ii) (D)).

In making a determination of cost-effectiveness, EPA evaluated the "overall effectiveness" of any alternative that satisfied the NCP threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was then evaluated by assessing three of the five NCP balancing criteria (i.e., long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost -effectiveness. The Selected Remedy meets these criteria and provides for overall effectiveness in proportion to its cost.

The estimated present-worth cost of the Selected Remedy is $0. This is significantly less than any of the groundwater extraction and treatment alternatives and is much easier and less disruptive to the environment to implement,

D. Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions can be utilized in a practicable manner for OU2. Alternative treatment technologies and/or resource recovery technologies were found not to be appropriate for Site conditions, i.e., the presence of fractured bedrock. Of those alternatives that are protective of human health and the environment and that comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria.

E. Preference for Treatment as a Principal Element

The Selected Remedy utilizes treatment as a principal element in that it relies upon the ET cover system (OU1 remedy) to prevent infiltration of water through the landfill thereby reducing the amount of leachate generated.

F. Five-Year Review Requirements

Because hazardous substances, pollutants, or contaminants will remain in the groundwater above levels that allow for unlimited use and unrestricted exposure until the cleanup goals are attained, Five-Year Reviews will continue until the cleanup goals are attained to assess whether the remedy is, or will be, protective of human health and the environment.

XIV. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan identifying EPA's preferred alternative for OU2 was released for public comment on August 24, 2005. EPA received no written or verbal comments at the public meeting and the only written comments received by EPA were submitted on behalf of the PRP Group after the end of the comment period. No significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary as a result of those comments.

RECORD OF DECISION
FOR
OPERABLE UNIT 2

WALSH ROAD LANDFILL SITE

PART 3 - RESPONSIVENESS SUMMARY

On August 24, 2005, EPA announced the opening of the public comment period and published its preferred alternative for Operable Unit Two ("OU2") at the Walsh Road Landfill Site in Honey Brook Township, Chester County, Pennsylvania. EPA conducted a public meeting on September 8, 2004, at the Honey Brook Township Building in Honey Brook, PA. Only two people attended the public meeting. One was a concerned resident who lives near the Site and the other was a consultant to the PRP Group. No local or state government officials or media representatives were present. There were no written or verbal comments submitted to EPA during the public meeting. The public comment period closed on September 22, 2005. No comments, either written or verbal, were received concerning this proposal during the comment period. A comment letter was later submitted by the PRP Group on September 27, 2005, that concurred with EPA's preferred alternative. The following comments (with responses) are addressed below.

Comment 1. The term plume is used to describe existing groundwater quality impacts at the Site. The recent groundwater quality data collected at the Site indicates sporadic, low concentration detections of some metals and organic compounds; the distribution of which suggests that no discernible plume is emanating from the site. Therefore, the Group believes that it is inappropriate to use the term "plume" to describe these detections.

EPA Response: While recent groundwater sampling data shows that many monitoring wells at the Site do not contain contaminants above federal MCLs, a handful of wells in proximity to the limits of the landfill still contain limited Site-related contamination at or above federal MCLs. When contaminants from a Site flow downward and contaminate groundwater, the outward spread of the contaminants is called a "plume". The term "plume" could also be used to describe the limits of groundwater contamination. In this instance, EPA used the term "plume" to describe the limits of groundwater contamination at the Walsh Road Landfill Site.

Comment 2. In the first paragraph on page 6, USEPA states the following:

The higher levels of arsenic are attributed to leachate generated from the landfill and to reducing conditions caused by landfill decay.

Arsenic is a naturally occurring element and based on the existing data, there is no definitive evidence to confirm that the elevated arsenic levels observed in wells EPA-2 and EPA-2A are attributable to the landfill. The Group believes that this statement should be removed

from the PRAP.

EPA Response: Levels of arsenic found in groundwater samples from monitoring wells EPA-2 and EPA-2A are above naturally occurring background levels near the Site. While it is true that a limited number of groundwater samples have been taken from these wells, there is no other logical explanation for the source of arsenic. EPA will keep this statement in the decision document.

Comment 3. The summary of site risks provided in the PRAP is based primarily on information presented in the Baseline Risk Assessment Report performed on behalf of USEPA in October 1993. This risk evaluation was prepared based [on] site conditions observed during investigations performed in the 1980s and early 1990s. Present conditions differ significantly from the historic conditions that were the basis of the Baseline Risk Assessment. In fact, the majority of constituents that were identified as COCs in the Site groundwater in 1992 are no longer present in groundwater beneath the Site. For example, 31 volatile and semi-volatile organic compounds were listed in the Baseline Risk Assessment as COCs; however, only six of these compounds were detected in groundwater samples collected during the 2005 groundwater sampling events and none of the organic compounds detected exceeded MCLs. Based on these data, the site groundwater quality already meets the proposed RAOs for organic compounds, which were developed to mitigate potential risks. In addition, for those constituents that continue to be detected at the Site, their current (i.e., 2005) concentrations are significantly lower than those that were used to calculate the site specific risks in the 1993 evaluation.

Although EPA acknowledges that improvements in groundwater quality have occurred and that the summary of risks should be viewed as "overly conservative", the observed changes in site conditions have been so significant that the assumptions and findings of the Baseline Risk Assessment are no longer valid. Therefore, the Group believes that the findings of the historic risk assessment should be removed from the description of existing and future risks at the Site.

EPA Response: EPA is required by the NCP to conduct a risk assessment as part of the remedy selection process. Actual and potential exposure pathways are assessed in the risk assessment to support potential response actions. In this instance, EPA included the 1993 evaluation in the PRAP with statements qualifying the risk assessment as overly conservative in order to meet this requirement rather than conducting a new risk assessment based on current Site conditions.

Comment 4. The description of alternatives on page 10 of the PRAP states the following:

. . . The approved Groundwater Monitoring Plan (April 2005) for the OU1 remedy provides semi-annual monitoring of twelve (12) monitoring wells for Target Compound List (TCL) VOCs, TCL SVOCs, TAL total and dissolved inorganics, and TCL Pesticides and PCBs. This monitoring plan will continue through at least the first Five-Year Review following construction of the landfill cover system. If the requirement for groundwater monitoring under the ET cover system remedy (OU1) no longer becomes necessary, the GMP will be revised or amended as appropriate to continue groundwater sampling that would be required under OU2...

This statement indicates that USEPA would not approve proposed modifications to the existing groundwater monitoring plan until after the first five-year review. This statement is inconsistent with the Group's understanding that the monitoring plan could be revised, as appropriate, based on the findings of the baseline groundwater sampling or subsequent sampling events. The Group requests that this statement be modified to clarify that the groundwater monitoring program for OU-2 will continue through at least the first five year review in accordance with a USEPA-approved groundwater monitoring plan.

EPA Response: Any proposed modifications to the Groundwater Monitoring Plan made during implementation of the OU-1 remedy would also be effective for the OU-2 remedy, provided the modifications are approved by EPA.

Comment 5. The discussion of Compliance with Applicable, Relevant, and Appropriate Regulations on page 13 states the following:

If implementation of the selected remedy demonstrates, in corroboration with hydrogeological and chemical evidence, that it will be technically impracticable to achieve and maintain the remediation goals throughout the ***area of attainment****, the EPA, in consultation with the Commonwealth of Pennsylvania, intends to amend the ROD or issue and Explanation of Significant Differences to inform the public of alternative groundwater goals.*

The Group concurs with this statement, but requests that it be amended to include the following statement: (after area of attainment) "or that groundwater quality impacts are from a source other than the Site, . . . " The addition of this or similar language is necessary to clarify that the Potentially Responsible Parties are not liable for groundwater contamination that is not attributable to the Site.

EPA Response: Under CERCLA, PRPs cannot be held responsible for non Site-related contamination and the PRPs at this Site have not been required to respond to any contamination that is not Site-related. Therefore, there is no reason to include this statement in the decision document.

Comment 6. The discussion of long-term effectiveness and permanence on page 13 states the following:

Alternatives 3 through 6 have the potential to meet MCLs marginally faster than Alternative 2 because they are active cleanup processes. The cleanup time for groundwater at this Site, however, is not crucial, because residents impacted by contaminated groundwater have been connected to a water line and the existing and proposed institutional controls will prevent further contact with contaminated groundwater.

Given the current groundwater quality and the anticipated benefits to be gained by installation of the landfill cover system under the OU1 remedy, the Group believes that the other

alternatives offer no benefit over the proposed alternative in terms of long-term effectiveness and permanence. In addition, the Group requests that this section be modified to clarify that not all properties that were connected to the water line were impacted by the Site.

EPA Response: Comment noted. While groundwater contamination in some private wells may not have been in excess of federal MCLs, EPA took a conservative approach for establishing the list of water line connections by including those residences which were provided with bottled water and those residences with wells that contained Site-related contamination. There is no indication that any properties connected to the water line were impacted by sources other than the Site. Therefore, the statement contained in this section will remain as written.

APPENDIX A

FIGURES

Figure 1 - Area Map

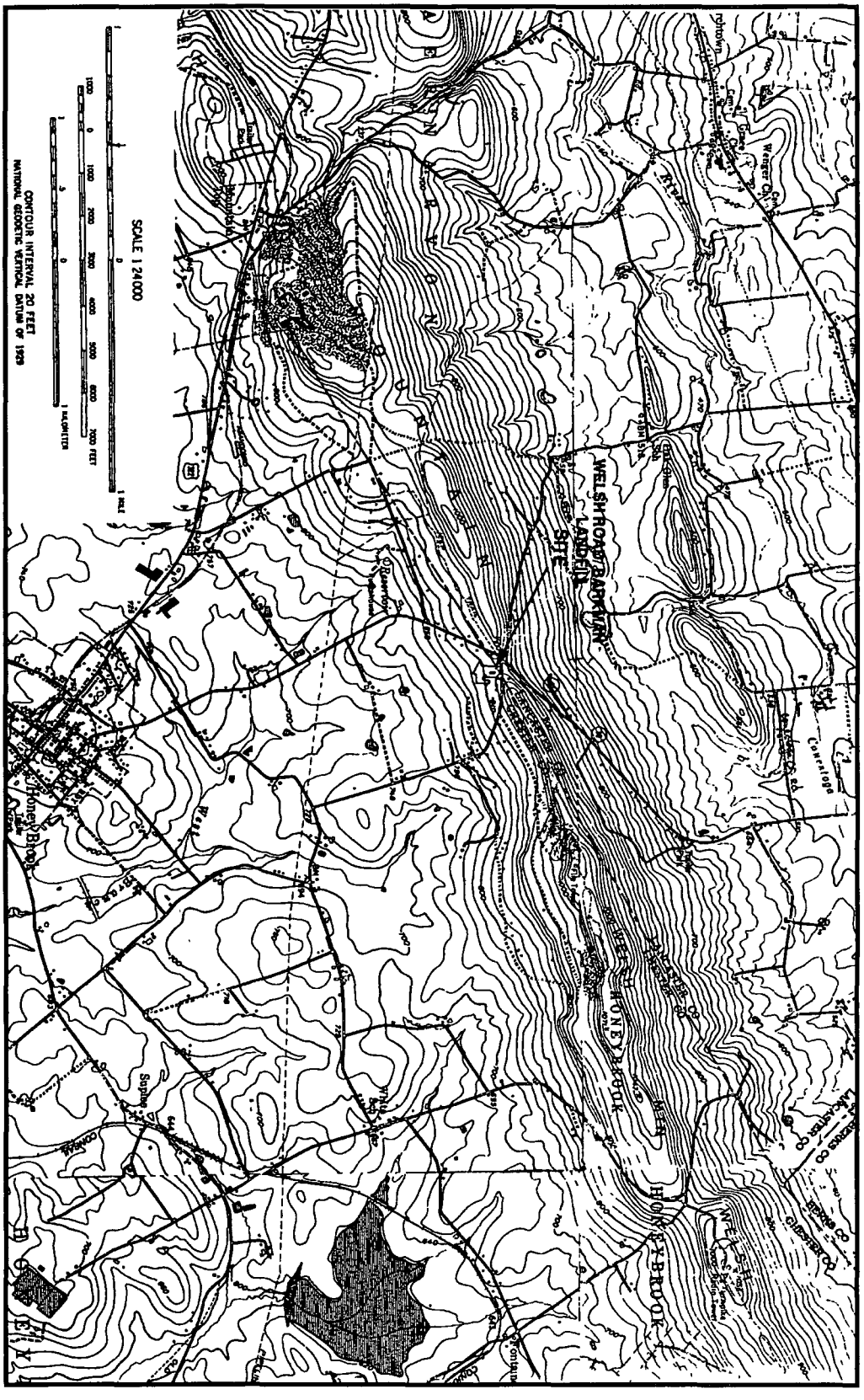


Figure 2 - Site Location Map

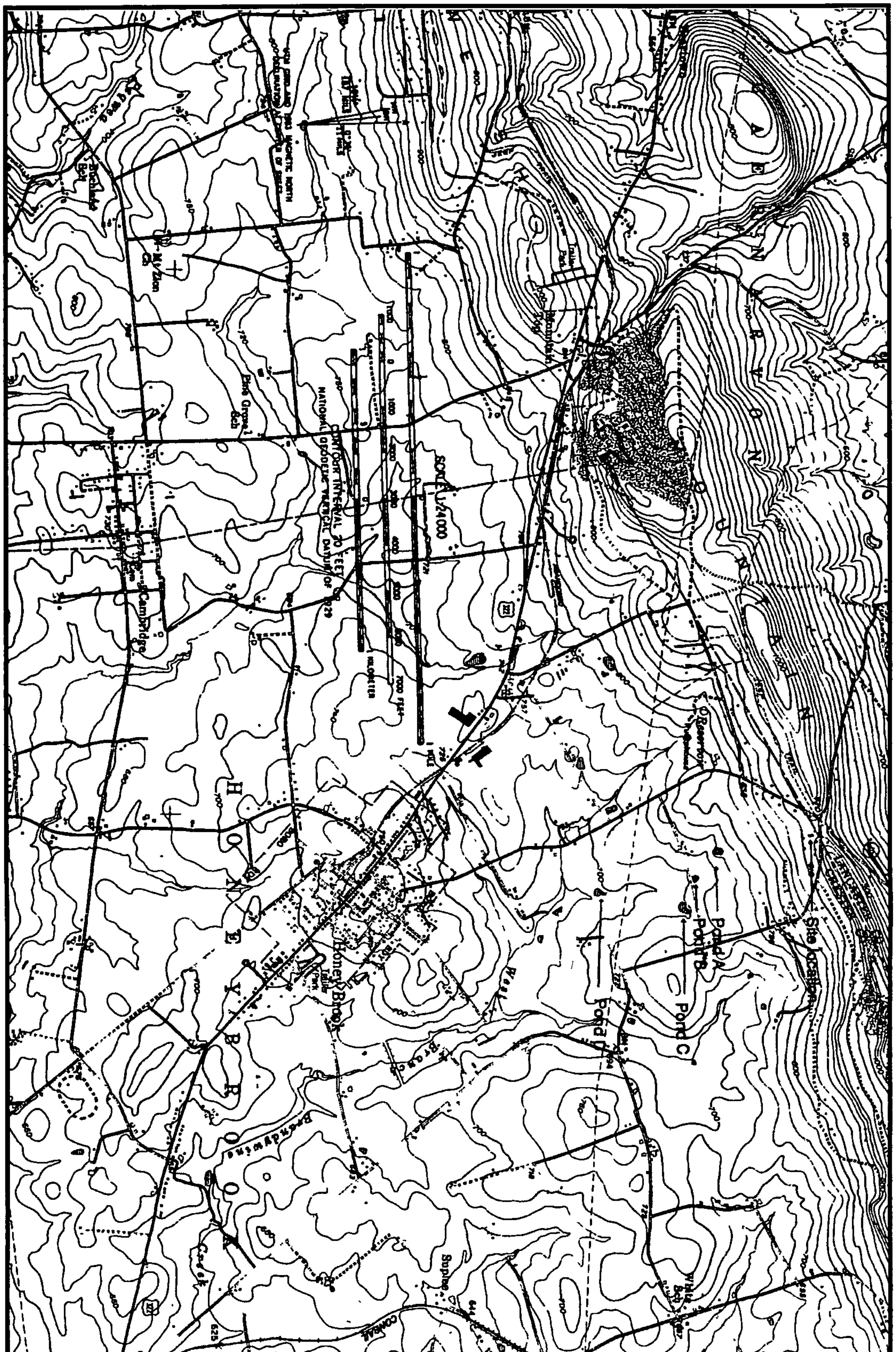


Figure 3 - Monitoring Well Locations

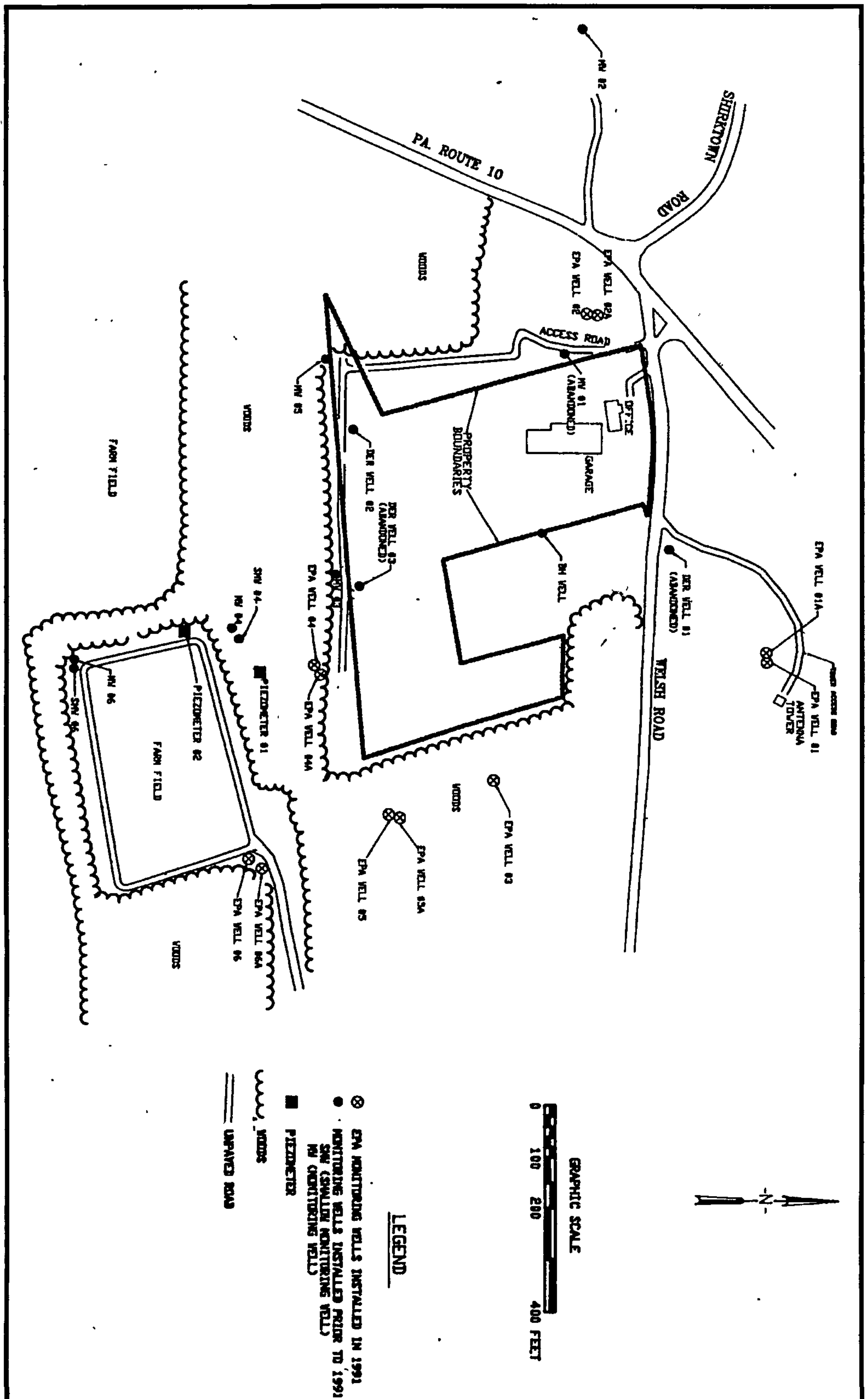
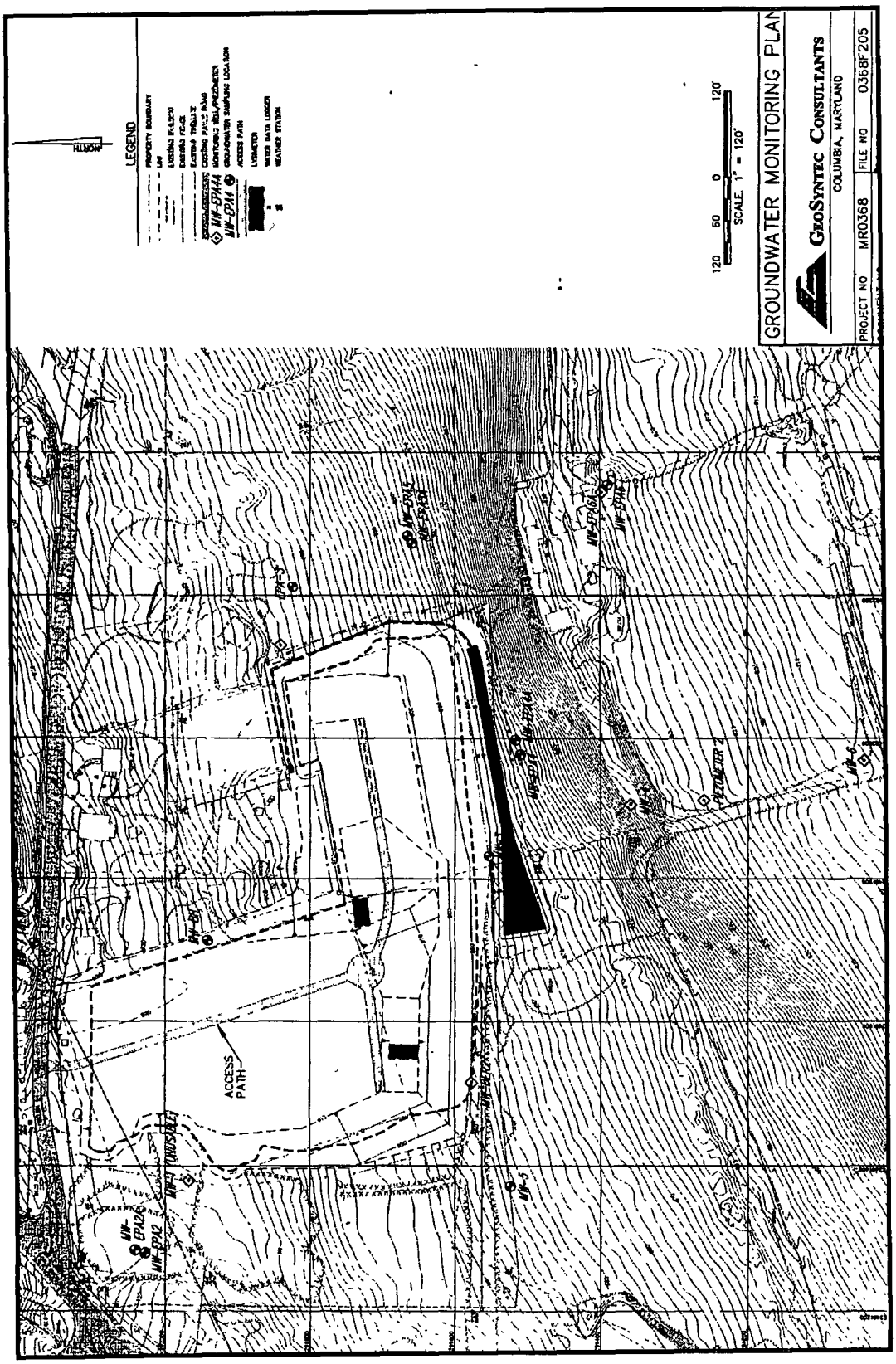


Figure 4 - Well Sampling Locations under the Groundwater Monitoring Plan



APPENDIX B

TABLES

Table 1

Comparison of Maximum Contaminant Concentrations Observed within Groundwater Monitoring Wells at the Walsh Road Landfill

Compound	Maximum Contaminant Level MCL (ppb)	Maximum Concentration during the 1992 FGW Study (ppb)	Well location 1992 FGW Study	Maximum Concentration April 1999 (ppb)	Well(s) location April 1999	Maximum Concentration July 1999 (ppb)	Well(s) location July 1999	Maximum Concentration May 2002 (ppb)	Well(s) location May 2002	Maximum Concentration June 2005 (ppb)	Well(s) location June 2005
Organic Compounds											
Benzene	5	**11.8**	DER-2	**6J**	EPA-3	**7**	EPA-3	4 4	EPA-3	3J	EPA-2 EPA-3 EPA-4 EPA-4A MW-3 MW-5
1,4-Dichlorobenzene	NE	14.4	DER-2	3J	EPA-3 EPA-4A MW-3 DER–2	5	MW-3	5.6	DER-2	4J	MW-5
Inorganic Compounds											
Arsenic	10*	**27.1**	EPA-2	**40.9**	EPA-2	**32.1**	EPA-2	**56**	EPA-2	**35.6**	EPA-2
Barium	2,000	1,490	EPA-4A	1,690	EPA-4	1,720	EPA-5A	1,630	EPA-4A	**2,510**	EPA-4A
Lead	15**	**181**	DER-2	15 4J	MW-2	10.9	EPA-5	14	EPA-3		
Manganese	730 (RBC)	24,600	EPA-5A	37,500	MW-3	17,300	EPA-5A	12,300	EPA-5A	14,700	EPA-4A
Mercury	2	**50.0**	MW-4	**6**	SMW-6	**2.6**	MW-4	1.0	MW-6	0.52	EPA-4A
Nickel	NE	136	MW-2	18.4	MW-2	130	EPA-5	ND	-	ND	-

Notes
* 10 ppb as of 1/23/06
** Action Level
J Approximate value
RBC - EPA Region III RBC Table, April 2005 RBCs based on a cancer risk of 10^{-6} for carcinogens and a hazard quotient of 0.1 for non-carcinogens
ND - Not detected at quantitation limit
NE - Not established

Table 2

Remedial Alternatives Estimated Costs[1]

Remedial Alternative	Description	Capital Cost	Annual O&M Cost	Present Worth Cost
1	No Action	$0	$0	$0
2	Groundwater Monitoring and Institutional Controls	$26,000	$281,680	$1,441,370
3	Groundwater Collection, Precipitation contingency, Air stripping contingency, Discharge to Surface Water, Groundwater Monitoring, and Institutional Controls	$351,580 to $1,097,400	$162,758 to $672,871	$1,812,992 to $5,226,970
4	Groundwater Collection, Precipitation contingency, Air stripping contingency, Discharge to POTW, Groundwater Monitoring, and Institutional Controls	$804,450 to $1,550,000	$402,520 to $1,192,632	$4,568,210 to $9,844,520
5	Groundwater Collection, Precipitation contingency, Carbon Adsorption contingency, Discharge to Surface Water, Groundwater Monitoring, and Institutional Controls	$351,580 to $1,185,750	$162,758 to $957,982	$7,588,750
6	Groundwater Collection, Precipitation contingency, Carbon Adsorption contingency, Discharge to POTW, Groundwater Monitoring, and Institutional Controls	$804,450 to $1,638,750	$402,520 to $1,196,343	$9,962,605

[1] - Costs taken from the 1993 FFS.

APPENDIX C

GLOSSARY

Administrative Record: An official compilation of documents, data, reports and other information that form the basis for response actions selected for a **Superfund** site. The record is placed in the information repository to allow public access to the material.

Applicable or Relevant and Appropriate Requirements ("ARARs"): The federal and state requirements or criteria that are determined to be legally applicable or relevant for the Site cleanup work.

Aquifer: A layer of rock or soil that can supply usable quantities of ground water to wells and springs. Aquifers can be a source of drinking water and provide water for other uses as well.

Area of Attainment: The area outside the boundary of any waste remaining in place and up to the boundary of the contaminant plume.

Baseline Risk Assessment: The baseline risk assessment is an essential component of the Remedial Investigation Report. This portion of the RI evaluates the ***carcinogenic*** and non-carcinogenic risks presented by the contaminants at the Site. Risk is calculated both for current uses and potential future uses of the property by a defined population (i.e. on and offsite residents, trespassers, etc).

Carcinogen: An agent which causes or contributes to the production of cancer.

C.F.R.: The Code of Federal Regulations. For example, the citation 40 C.F.R. 260 means Title 40 of the Code of Federal Regulations, Part 260.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The Act created a Trust Fund, known as **Superfund**, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

Feasibility Study (FS): A report that identifies and evaluates alternatives for addressing the contamination that presents unacceptable risks at a **Superfund** site.

Ground Water: The water beneath the earth's surface that flows through the soil and rock openings and often serves as a source of drinking water.

Hazard Index (HI): A numeric representation of non-cancer risk. A HI exceeding one (1.0) is generally considered an unacceptable non-cancer risk. A Hazard Index for a pathway or site is often obtained by adding the ***Hazard Quotients*** of individual chemicals.

Institutional Controls: Non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use.

Information Repository: A location where documents and data (e.g., administrative record) related to the Superfund project are placed by EPA to allow the public access to the material.

Leachate: A contaminated liquid that results when water trickles through waste materials and collects components of those wastes. Leaching may cause hazardous substances to enter soil, surface water or ground water.

Maximum Contaminant Levels ("MCLs"): Enforceable standards for public drinking water supplies under the Safe Drinking Water Act. Theses standards apply to specific contaminants which EPA has determined have an adverse effect on human health above certain levels.

Maximum Contaminant Level Goals ("MCLGs"): Non-enforceable health-based goals for drinking water that are established at levels at which no known or anticipated adverse human health effects occur.

mg/kg: Parts Per Million ("ppm")

National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"): The federal regulations found at 40 ***C.F.R.*** Part 300 that provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants and contaminants under the Superfund program.

National Priorities List ("NPL"): EPA's list of the nation's top priority hazardous waste sites that are eligible to receive federal money for response under **CERCLA**.

Operable Unit ("OU"): The work done at **Superfund** sites may be divided into smaller manageable phases called operable units.

Organic Compound: A carbon-based material.

Pathways: Routes which contaminants may follow as they move by gravity or ground water flow. In addition, an exposure pathway is the route a contaminant takes in reaching a potential receptor, such as a person, animal or plant.

Potentially Responsible Parties ("PRPs"): - An individual or company (such as a facility owner or operator, or a transporter or generator of hazardous substances) who may be legally responsible for the cleanup of hazardous substances at a Superfund site.

ppb: - Parts per Billion or ***ug/kg***. Five parts per billion is a fractional representation of 5 parts in 1 billion parts. For solids, ppb is a fraction based on weight, for example 5 pounds of a contaminant in a billion pounds (500,000 tons) of soil. For liquids ppb is based on volume, for example 5 tablespoons of a contaminant in a billion tablespoons (3,906,250 gallons) of water. A ppb is a much smaller quantity than a **ppm**.

ppm: - Parts per Million or ***mg/kg***. Five ppm is a fractional representation of 5 parts in 1 million parts.

Principal Threat:- Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. They include liquids and other highly mobile materials (e.g., **solvents**) or materials having high concentrations of toxic compounds.

Record of Decision ("ROD"): A public document that describes the remedial actions selected for a Superfund Site, why certain remedial actions were chosen as opposed to others, **and** how much they will cost. It summarizes the results of the **Remedial Investigation and Feasibility Study** reports and the comments received during the comment period for the Proposed Plan.

Redox (reduction-oxidation): A redox (reduction-oxidation) reaction is any reaction in which electrons are passed from one atom to another. In a reaction like this, one chemical is reduced (gains an electron) and one chemical is oxidized (loses an electron).

Remedial Action (RA): The actual construction or implementation phase of a Superfund Clean-up following a **Remedial Design** (RD).

Remedial Action Objectives (RAOs): Medium-specific or operable unit specific goals for protecting human health and the environment.

Remedial Design (RD): Once a determination is made as to what cleanup method(s) will be used (e.g., in-situ treatment and containment, etc) to cleanup a site, the next phase is the remedial design where construction details and technical specifications will be determined to assure proper application of the cleanup method.

Remedial Investigation (RI): A study which identifies the nature and extent of contamination at a **Superfund** site and forms the basis for the evaluation of environmental and human health risks posed by the site.

Remedial Investigation/Feasibility Study ("RI/FS"): A report composed of two scientific studies, the RI and the FS. The RI is the study to determine the nature and extent of contaminants present at a Site and the problems caused by their release. The FS is conducted to develop and evaluate options for the cleanup of a Site.

Solvent: A substance, usually a liquid, capable of dissolving another substance.

Superfund: The common name used for **CERCLA**.

TBC: "To Be Considered" - If not legally **Applicable or Relevant and Appropriate**

Requirement (ARAR), it is nevertheless useful information *to be considered* in developing remedial alternatives.

ug/kg: Part per Billion or ppb.

Volatile Organic Compound (VOC): An **organic compound** that readily evaporates (volatilizes) under atmospheric conditions.

Water table: The point below the surface of the soil where free standing water exists. This water is referred to as ground water.